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yiaX2 MNITSNSTTKD--IPRQRWLRIIPPILITCIISYMDRVNIAFAMPGGMDA
 prmA MQ-----KSQPGTRWFRIIVPILIA CIMSFMDRVNISFALPGGMEQ
 PE6 MNTASVSVTQSQAIPKLRWLRIVPPILITCIISYMDRVNIAFAMPGGMDD
 PK1 MNSST-----N-ATKRWWYIMPIVFITYSLAYLDRANFSFASAAGITE
 prmB MNTSR-----KLPVKRWWYLMPIVFITYSLAYLDRANYGFAAASGIEA
 PE1 MNSST-----N-ATKRWWYIMPIVFITYSLAYLDRANFSFASAAGITE
 * * * * *

yiaX2 DLGISATMAGLAGGIFFIGYLEFLOVPGGKIAVHSGGKFIGWSLVAVAVI
 prmA DLLMSSQMAGVVSGIFFIGYLEFLOVPGGKIAVHSGGKRFIAWSLVAVAVV
 PE6 ELGITASMAGLAGGIFFIGYLEFLOVPGGKLAVYGNKGKFIGWSLLAWAVI
 PK1 DLGITKGISLLGALFFLGYFFFQIPGAIYAERRSVRKLIFICLILWGAC
 prmB DLGISRGTSSLIGALFFLGYFFIFQVPGAIYAVKRSVRKLVFTSLLLWGFC
 PE1 DLGITKGISLLGALFFLGYFFFQIPGAIYAERRSVRKLIFICLILWGAC
 * * * * *

yiaX2 SVLT-GLITNQYQLLALRFLLGVAEGGMLPVVLTMTISNWFDPDAERGRANA
 prmA SVAT-GFVTHQYQLLILRFALGVSEGGMLPVVLTMTVSNWFPEKELGRANA
 PE6 SVLT-GLVTNQYQLLFLRFALGRFRSGMLRWVLTMTISNWFDPKERGRANA
 PK1 ASLDRDGAQYSRAGRAIRFILGVVEAAVMPAMLIYISNWFTKSERSRANT
 prmB AA-ATGLISNIPALMVIRFVLGVVEAAVMPAMLIYISNWFTRQERSRANT
 PE1 ASLDRDGAQYSSAGWRSVLFSAVVEAAVMPAMLIYISNWFTKSERSRANT
 * * *

yiaX2 IVIMFVPIAGIITAPLSGWIIITVLDWRWLFIEGLLSLVVLVLWAYTIYD
 prmA FVMMEAPLGGMITAPVSGWIIALLDWRWLFIEGLLSVVVLAVWWLMVSD
 PE6 IVIMFVPIAGILTAPLSGWIIITAWDWRMLFLVEGALS LVVMVLWYFTISN
 PK1 FLILGNPVTVLWMSVVSGLYLIQAFGWREMFIIEGVPAPIWAF CWWVLVKD
 prmB FLVLGNPVTVLWMSIVSGYLINAFGWREMFIIEGVPALIWAI FWWFIVRD
 PE1 FLILGNPVTVLWMSVVSGLYLIQSFGWREMFIIEGVPVLWAF CWWVLVKV
 * * * *

yiaX2 RPQEARWISEAEKRYLVETLAEQKAIAG-TEVKNASLSAVLSDKTMWQL
 prmA RPEDARWLPAAREYLLREMAKDKAERSKLPPISHAPLQEVFHN PGLMKL
 PE6 RPQEAKRISQA EKDYLIKTLHDEQLLIKG-KTVRNASLRRLGDKIMWK-
 PK1 KPSQVNWLAESEKAALQEQLEREQQGIKPVRNYGEA-----FRSRNVLL
 prmB KPEQVSWLTETEKQQLASAMAEQQQAIPPMRNVPQA-----LRSRNVVL
 PE1 KPSQVNWLS ENEKAALQAQLESEQQGIKAVRNYGEA-----FRSRNVILL
 * * * *

FIG. 1A

yiaX2 IALNFFYQTGIYGYTLWLPTILKELTHS-SMGQVGM LAILPYVGAIAGMF
 prmA VILNFFYQTGDYGYTLWLPTI IKNL TGA-SIGNVGLLTVLPFIATLSGIY
 PE6 ----FFYQTGIYGYTLWLPTILKGLTNG-NMEQVGM LAILPYIGAIFGML
 PK1 CMQYFAWSIGVYG FVLWLPSIIRSGGENMGMVEVGWLSSVPYLAATIAMI
 prmB CLLHALWSIGVYG FMMWMP SILRSAA-SMDIVRVGWLA AVPYLA AIITML
 PE1 CMQYFAWSIGVYG FVLWLPSIIRSGGVNMGMVEVGWLSSVPYLAATIAMI

* ** . . * . * . * * * * . . *

yiaX2 LFSSLS DRTGKRKLFV-CLPLIGFALCMFLSVALKNQIWLSYAALVGC GF
 prmA VVS YLSDKTGKRRQWV-MISLFCFAACLLASVLLREFVLAAYLALVACGF
 PE6 IISTLS DRTGKRKFV-ALPLACFAICMALS VLLKDHIWWSYAALVGC GV
 PK1 VVSWASDKMQNRKLFVWPLLLI AVFAFIGSWAVGANLSWVS YTL LVIAGA
 prmB VISWLS DKTGLRRLFIWPLLLI ASVTFFGSWLLGSYSFWFSYGLLV LAAA
 PE1 VVSWASDKMQNRKLFVWPLLLIGGLAFIGSWAVGANHFWASYTL LVIANA

. * ** . * . . . * . * *

yiaX2 FLQSAAGVFWTIPARL FSAEMAGGARGVINALGNLGGFCGPYAVGVLITL
 prmA FLKAATSPFWSIPGRIAPPEAAGSARGVINGLGNLGGFCGPWLVLGLMIYL
 PE6 FTQAAAGVFWTIPPKLFNAEMAGGARGVINALGNLGGFCGPYMGVLITL
 PK1 AMYAPYGPFFAI IPEMLPRNVAGGAMALINSMGALGSFFGSWFVG YLNGT
 prmB CMYAPYGPFFAI IPELLPKNVAGISIGLINCCGALGAFAGAWLVG YLNGL
 PE1 AMYAPYGPFFAI IPEMLPRNVAGGAMALINSMGALGSFFGSWFVG YLNGT

. . . * * * . . * * * * * * * *

yiaX2 YSKDAGVYC-LAISLALAA L MALLLP AKCDAGAAPVK--TINPHKRTA-
 prmA YGQNAAVVT-LAGSLIIAGIIAALLPTQCDLRPAEARQONFTPRIHDAK
 PE6 FSKDVG VYS-LAVSLASASVLALMLPNRCDQKAGA-----E-
 PK1 TGSPSASYIFMGVALFVSVWLT LIVKPA---NNQKLP---LGAR---HA
 prmB TGGPGASYTFMAIALLVSVGLVFFLKVP---SGNLVTRRL LKGD---AK
 PE1 TGSPSASYIFMGVALFASVWLT LIVKPA---NNQKLP---IGAR---HA

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FIG. 1B

Fermentative Production of 2-KLG

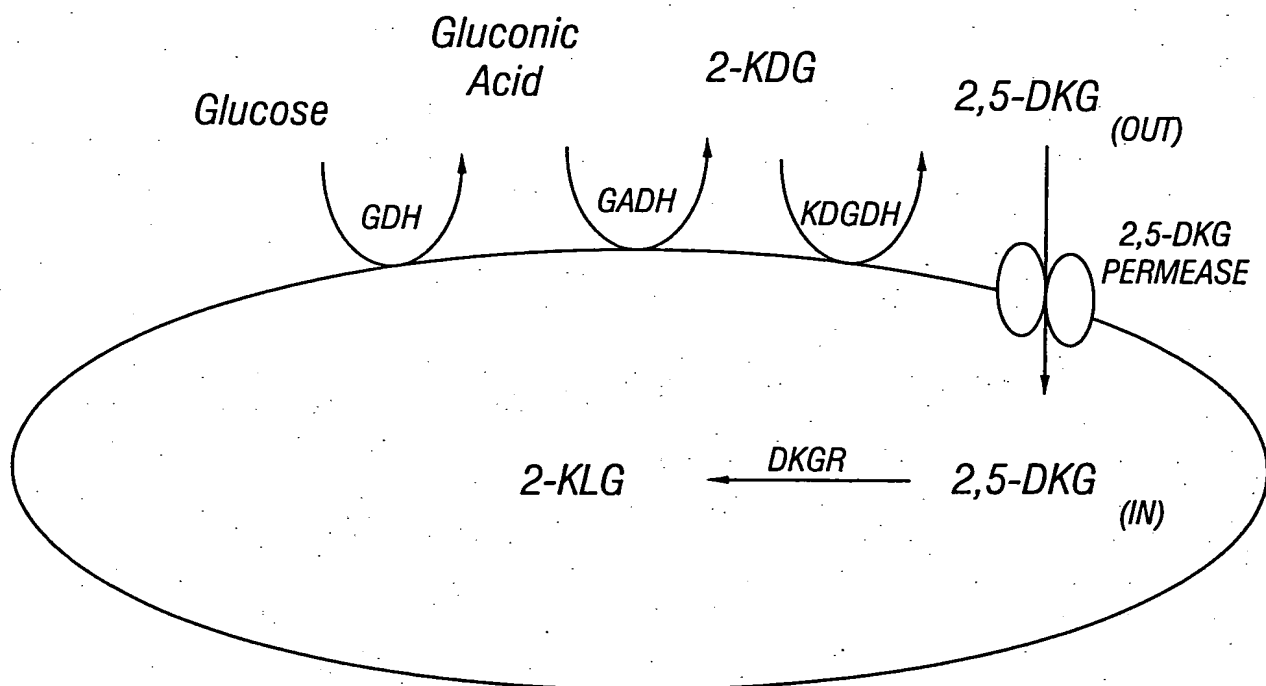


FIG. 2

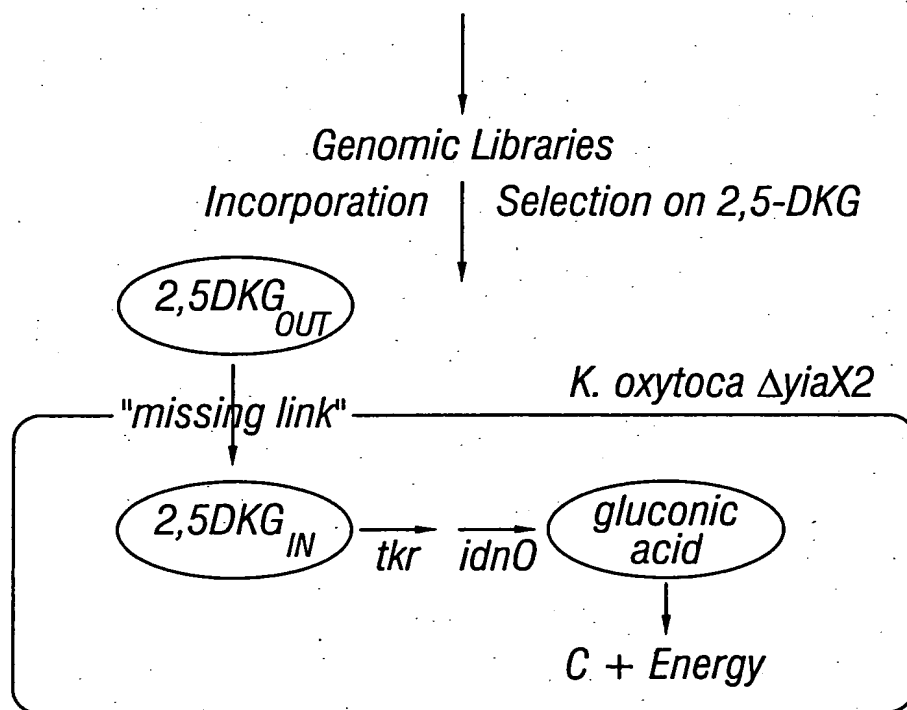


FIG. 3